

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Mohammad H. S. Amin et al.  
Application No. : 10/791,579  
Filed : March 2, 2004  
For : SYSTEMS AND METHODS FOR ENTANGLING QUBITS

Examiner : Sara W. Crane  
Art Unit : 2811  
Docket No. : 240105.419C2  
Date : May 2, 2007

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

RESPONSE TO RESTRICTION REQUIREMENT

Commissioner for Patents:

In response to the Restriction Requirement dated March 26, 2007, please extend the period of time for response one month, to expire on May 26, 2007. Enclosed are a Petition for an Extension of Time and the requisite fee. Applicants hereby elect Group I, claims 53-66, for examination at this time, and respectfully traverse the Restriction Requirement.

In the Restriction Requirement dated March 26, 2007, the Examiner restricted the application into Species I, which included independent claims 53 and 60 and all of their respective dependent claims, and Species II, which included independent claim 67 and claims 68-70 that depend therefrom.

Species I is allegedly directed toward a system having a plurality of grounding switches coupled to a bus, and Species II is allegedly directed toward a method of entangling qubits through at least one switch. The Examiner then states that the species are independent or distinct because the method of entangling qubits can be used in systems other than the specific systems of claims 53 and 60, and the qubit systems of claims 53 and 60 can be used where entanglement occurs in some fashion other than through a switch.

Applicants respectfully submit that Figure 13 is generic with respect to independent claims 53, 60, and 67. In particular, Figure 13 shows a plurality of qubits (100) arranged in an array (300) and a control system (800), which are limitations in claim 60. In

addition, Figure 13 also shows a plurality of grounding switches (130), each of the grounding switches extends between a ground and a respective one of the grounding switches, which are limitations in claim 53. Figure 13 clearly shows “coupling a first qubit in a plurality of qubits to a second qubit in the plurality of qubits through at least one switch,” as recited in claim 67. The description of Figure 13 describes a method of entangling qubits. Thus, Figure 13 is generic to all of the independent claims, and consequently, Applicants believe that the restriction is improper.

Furthermore, the Examiner has the burden to establish a serious burden unless the claims are restricted. “Every requirement to restrict has two aspects: (A) the reasons ... why each invention as claimed is either independent or distinct from the other(s); and (B) the reasons why there would be a serious burden on the examiner if restriction is not required ... .” (Emphasis Added.) MPEP 808. “Where the related inventions as claimed are shown to be ... distinct ... the examiner ... must explain why there would be a serious burden on the examiner if restriction is not required.” (Emphasis Added.) MPEP 808.02.

Under MPEP 808.02, the Examiner is required to explain why there would be a serious burden on the Examiner if the restriction is not required, but yet the Examiner has failed to state any reason as to why examining all of the claims will pose a serious burden on the Examiner. Therefore, it is respectfully submitted that the Restriction Requirement is fatally deficient.

In making the above arguments, Applicant does not admit that any of the independent claims are obvious in light of one another. In light of the foregoing remarks, Applicant respectfully requests that the Restriction Requirement be withdrawn and all pending claims examined.

Respectfully submitted,  
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